

DETAILED ACTION

Response to Amendment

1. Receipt of Applicant's Amendment filed 07/08/08 is acknowledged.

EXAMINER'S AMENDMENT

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Wesley Ashton (RN 47,395) on 09/04/08.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

1. (Currently Amended) A method of connecting a plurality of table-format data, each table-format data being expressed as a record array containing an entry and an entry value included in the entry, and converting the connected table-format data as join tables to a tree structure, the method comprising the steps of:
 - (a) dividing each table-format data into one or more information blocks, each information block containing a value list in which entry values belonging to specified entries are stored in order of entry value numbers corresponding to the entry values and a pointer array in which pointer

values ~~for~~ indicating the entry value numbers are stored in univocal order of record numbers;

(b) selecting two table-format data in which an entry is ~~to be~~ made common;

(c) finding an entry that is ~~to be~~ made common in the selected two table-format data;

(d) determining table-format data on which default sorting order is reflected, as master table-format data, of specified information blocks, and determining other table-format data as slave table-format data;

(e) in the case where value lists contained in the specified information blocks are equalized with each other in the selected two table-format data, generating a master-side projection array for the master table-format data, wherein the master-side projection array is formed by summing up the number of times of duplication of each line, and generating a master-side ordered set for the master table-format data and also a slave-side projection array for the slave table-format data, wherein the slave-side projection array is formed by summing up the number of times of duplication of each line in a join table, and generating a slave-side ordered set for the slave table-format data, wherein the slave-side ordered set is sorted by entry used as a key for joining;

- (f) repeating steps (b), (c), (d) and (e), and when there is a table which is to be joined with the slave table-format data of the two table-format data, using the slave table-format data as master table-format data;
- (g) generating a reverse mapping array between one join table and a subsequent join table using the master-side projection array as an original array for the subsequent join table;
- (h) selecting one of the table-format data connected by joining to be a root ~~from the table-format data connected by joining~~, and determining depth of each table-format data in accordance with the connection of the table-format data;
- (i) securing an area for a tree description table having as a value a combination of the depth and a record number;
- (j) initializing a current depth to a the depth of the table-format data to be the root of the tree structure;
- (k) specifying a record in the master-side ordered set for the join table corresponding to the current depth, and arranging a value indicating the record together with the depth into the area for the tree description table;
- (l) acquiring an element in the master-side ordered set for the subsequent join table by tracing the slave-side projection array and the slave-side ordered set corresponding to the master-side ordered set for the join table on the current depth, as well as, when present, the reverse mapping array and the master-side projection array for the subsequent join table; and

(m) repeating steps (k) and (l) with sequentially searching in the direction of the depth until no further elements are acquired.

2. (Currently Amended) The method as ~~described~~ claimed in claim 1, characterized in ~~that in~~ step (g), wherein the reverse mapping array is omitted when ~~all the whole set~~ of the plurality of table-format data ~~are~~ is used.

3. (Cancelled)

4. (Cancelled)

5. (Currently Amended) The method as claimed in claim 1, further comprising the step of:

performing one of searching, totaling and sorting with respect to the entry that is ~~to be~~ made common in at least one of the two table-format data in which the entry is ~~to be~~ made common.

6. (Currently Amended) A memory device storing a program for connecting a plurality of table-format data, each table-format data being expressed as a record array containing an entry and an entry value included in the entry, and converting the connected table-format data as join tables to a tree structure, the program characterized by causing a computer operably connected to the memory device to execute the steps of:

- (a) dividing each table-format data into one or more information blocks, each information block containing a value list in which entry values belonging to specified entries are stored in order of entry value numbers corresponding to the entry values and a pointer array in which pointer values ~~for~~ indicating the entry value numbers are stored in univocal order of record numbers;
- (b) selecting two table-format data in which an entry is to-be made common;
- (c) finding an entry that is to-be made common in the selected two table-format data;
- (d) determining table-format data on which default sorting order is reflected, as master table-format data, of specified information blocks, and determining other table-format data as slave table-format data;
- (e) in the case where value lists contained in the specified information blocks are equalized with each other in the selected two table-format data, generating a master-side projection array for the master table-format data, wherein the master-side projection array is formed by summing up the number of times of duplication of each line, and generating a master-side ordered set for the master table-format data and also a slave-side projection array for the slave table-format data, wherein the slave-side projection array is formed by summing up the number of times of duplication of each line in a join table, and generating a slave-side ordered

set for the slave table-format data, wherein the slave-side ordered set is sorted by entry used as a key for joining;

(f) repeating steps (b), (c), (d) and (e), and when there is a table which is to be joined with the slave table-format data of the two table-format data, using the slave table-format data as master table-format data;

(g) generating a reverse mapping array between one join table and a subsequent join table using the master-side projection array as an original array for the subsequent join table;

(h) selecting one of the table-format data connected by joining to be a root from the table-format data connected by joining, and determining depth of each table-format data in accordance with the connection of the table-format data;

(i) securing an area for a tree description table having as a value a combination of the depth and a record number;

(j) initializing a current depth to a the depth of the table-format data to be the root of the tree structure;

(k) specifying a record in the master-side ordered set for the join table corresponding to the current depth, and arranging a value indicating the record together with the depth into the area for the tree description table;

(l) acquiring an element in the master-side ordered set for the subsequent join table by tracing the slave-side projection array and the slave-side ordered set corresponding to the master-side ordered set for the join table

on the current depth, as well as, when present, the reverse mapping array and the master-side projection array for the subsequent join table; and
(m) repeating steps (k) and (l) with sequentially searching in the direction of the depth until no further elements are acquired.

7. (Currently Amended) The memory device storing the program as ~~described~~ claimed in claim 6, wherein the program causes the computer to execute the steps further characterized in ~~that in~~ step (g), wherein the reverse mapping array is omitted when all the whole set of the plurality of table-format data are is used.

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended) The memory device storing the program as claimed in claim 6, wherein the program further causes the computer to execute the step of:
performing one of searchinging, totaling and sorting with respect to the entry that is ~~to be~~ made common in at least one of the two table-format data in which the entry is ~~to be~~ made common.

11. (Currently Amended) The method as claimed in claim 2, further comprising the step of:

performing one of searching, totaling and sorting with respect to the entry that is ~~to be~~ made common in at least one of the two table-format data in which the entry is ~~to be~~ made common.

12. (Cancelled)

13. (Currently Amended) The memory device storing the program as claimed in claim 7, wherein the program further causes the computer to execute the step of:

performing one of searching, totaling and sorting with respect to the entry that is ~~to be~~ made common in at least one of the two table-format data in which the entry is ~~to be~~ made common.

14. (Cancelled)

15. (Cancelled)

Allowable Subject Matter

3. Claims 1-2, 5-7, 10-11 and 13 are allowed and are renumbered as 1-8.

The following is an examiner's statement of reasons for allowance: Claims 1-2, 5-7, 10-11 and 13 are allowable because the prior art made of record does not teach or fairly suggest the combination of elements as recited in independent Claims 1 and 6.

Specifically, the prior art of record does not teach:

- generating a master-side projection array for the master table-format data, wherein the master-side projection array is formed by summing up the number of times of duplication of each line, and generating a master-side ordered set for the master table-format data and also a slave-side projection array for the slave table-format data, wherein the slave-side projection array is formed by summing up the number of times of duplication of each line in a join table, and generating a slave-side ordered set for the slave table-format data, wherein the slave-side ordered set is sorted by entry used as a key for joining taken with the other limitations as recited in Claim 1.
- acquiring an element in the master-side ordered set for the subsequent join table by tracing the slave-side projection array and the slave-side ordered set corresponding to the master-side ordered set for the join table on the current depth, as well as, when present, the reverse mapping array and the master-side projection array for the subsequent join table taken with the other limitations as recited in Claim 6.

The dependent claims being definite, further limiting and fully enabled by the Specification are also allowed.

These features, together with the other limitations of the independent claim are novel and non-obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should

preferably accompany the issue fee. Such submissions should be clearly labeled
“Comments on Statement of Reasons for Allowance.”

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Ha Dang whose telephone number is (571)272-4033. The examiner can normally be reached on Monday-Friday from 9:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thanh-Ha Dang
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September 7, 2008

/don wong/

Supervisory Patent Examiner, Art Unit 2163

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